April 19, 1932. E. G. STAHLE 1,854,493

SHEET GLASS SURFACING APPARATUS

Filed Oct. 28, 1926 3 Sheets-Sheet 1

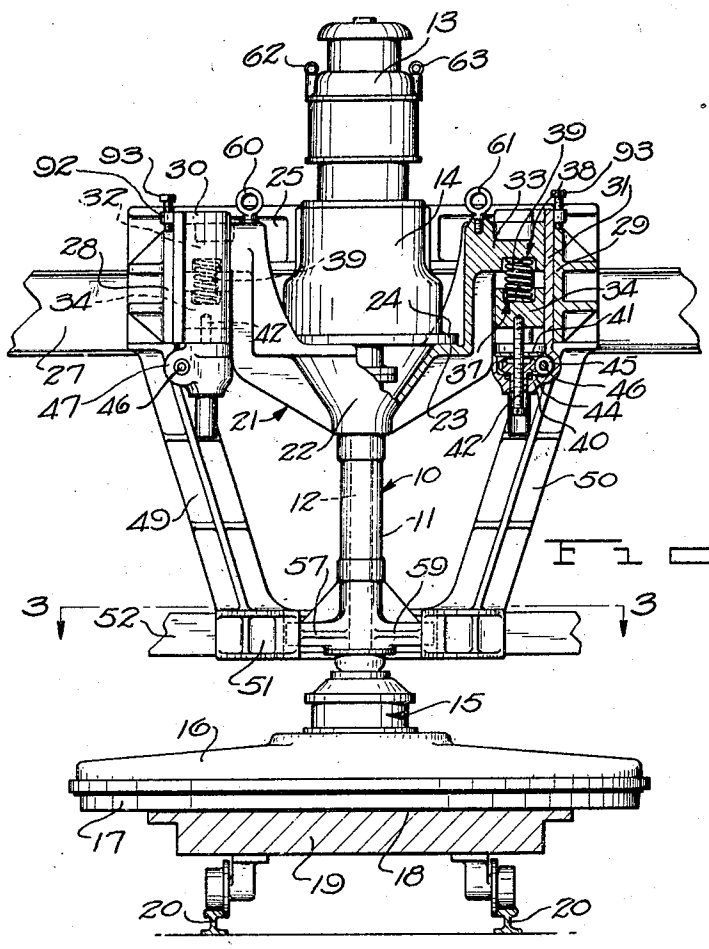


Fig. 1.

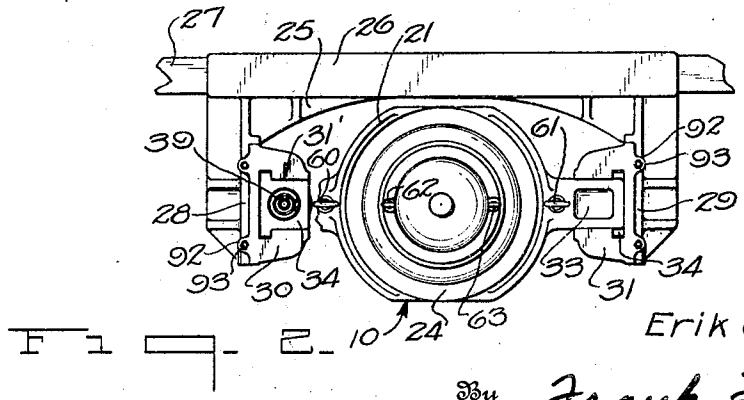


Fig. 2.

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SHEET GLASS SURFACING APPARATUS

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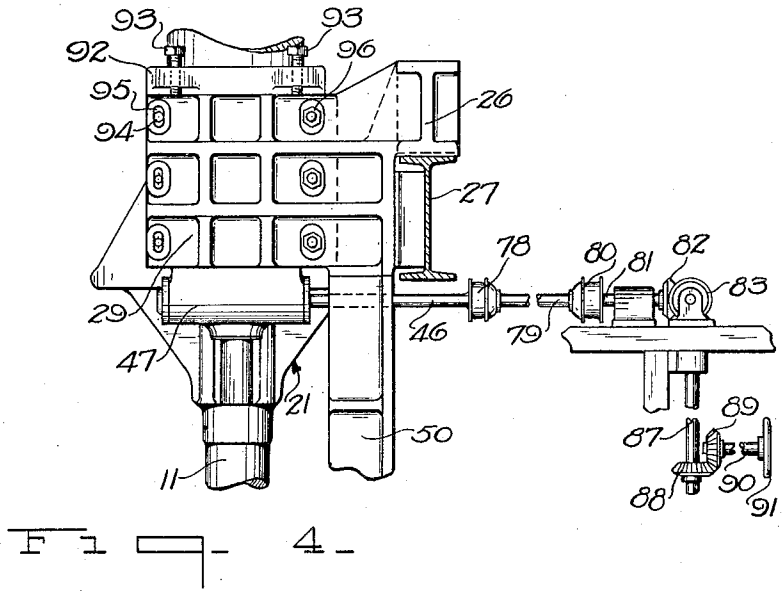


Fig. 4.

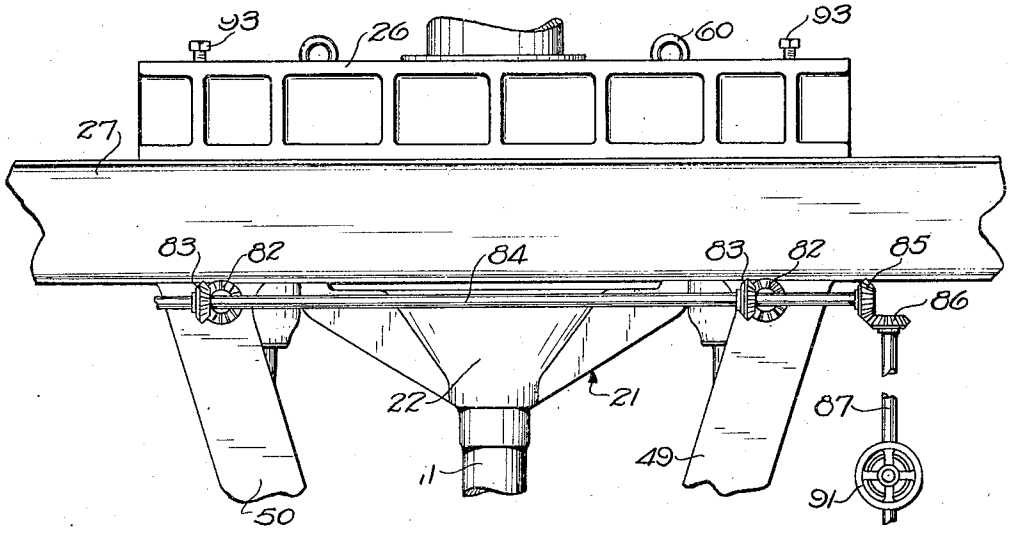


Fig. 5.

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SHEET GLASS SURFACING APPARATUS

Filed Oct. 28, 1926 3 Sheets-Sheet 3

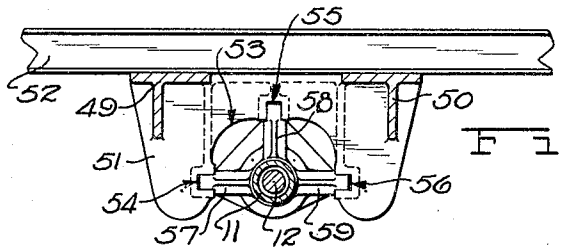


Fig. 3.

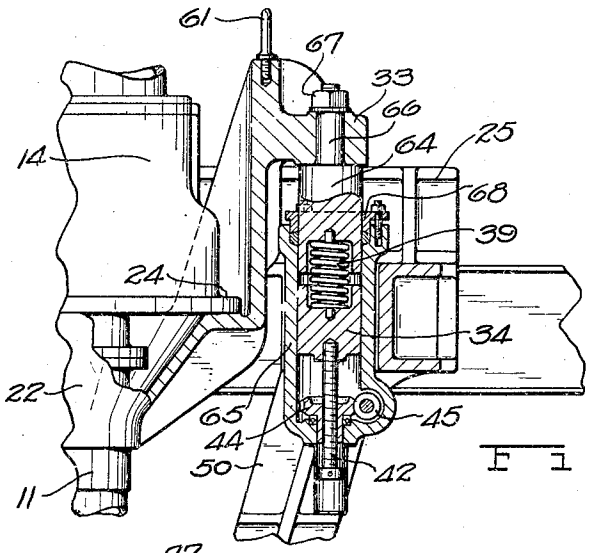


Fig. 6.

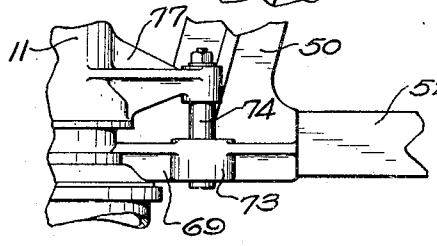


Fig. 7.

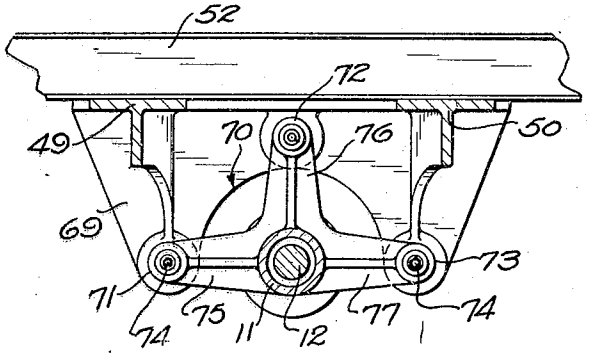


Fig. 8.

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Patented Apr. 19, 1932 1,854,493

# UNITED STATES PATENT OFFICE

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## SHEET GLASS SURFACING APPARATUS

Application filed October 28, 1926. Serial No. 144,667.

This invention relates to new and useful improvements in sheet glass surfacing apparatus.

The primary purpose of the present invention is to provide improved apparatus for supporting a surfacing unit in such a manner that sheets of glass to be surfaced, supported upon trucks or tables, may be passed therebeneath.

Another object of the invention is to provide improved supporting apparatus of the above character including means for raising and lowering the surfacing unit relative to the glass sheets in an easy and convenient manner.

A further object of the invention is to provide means for preventing lateral swinging movement of the surfacing unit with respect to the glass during the raising and lowering thereof.

A further object of the invention is the provision of means for yieldably supporting the surfacing unit whereby to permit free vertical sliding movement thereof.

A still further object of the invention is to provide means for allowing movement of the surfacing unit in a vertical direction and for preventing any lateral movement thereof.

Still another object of the invention is the provision of means for raising and lowering the surfacing unit perpendicularly relative to the glass being surfaced without changing the perpendicular axis of rotation of said unit.

Other objects and advantages of the invention will become apparent during the course of the following description when taken in connection with the accompanying drawings.

In the drawings wherein like numerals are employed to designate like parts throughout the same.

Fig. 1 is a front elevation partially in section, of improved sheet glass surfacing apparatus constructed in accordance with the present invention,

Fig. 2 is a top plan view thereof partially broken away,

Fig. 3 is a transverse section taken on line 3—3 of Fig. 1,

Fig. 4 is a side elevation of the upper portion of the supporting apparatus,

Fig. 5 is a rear view thereof,

Fig. 6 is a section showing a slightly modified form of the present invention,

Fig. 7 is a detail elevation showing a somewhat modified type of means for guiding the lower end of the surfacing unit, and

Fig. 8 is a top plan view of the modified type of guiding means shown in Fig. 5.

Referring now in detail to the drawings, and especially to Figs. 1 to 5 inclusive, there is disclosed a conventional type of grinding machine designated in its entirety by the numeral 10, and including a casing 11 in which is journaled a runner spindle 12 driven from a motor 13 through the intermediary of suitable reducing gears located in the casing 14. Secured to the lower end of the spindle 12 by means of a universal or floating connection 15 is a grinding head 16 carrying the grinding block 17.

This machine is shown in connection with the process wherein a series of sheets of glass 18 to be surfaced are supported upon a plurality of tables 19 mounted upon tracks 20, which tables are adapted to carry the glass sheets beneath a plurality of surfacing units to the type hereinabove set forth.

For the purpose of supporting the surfacing unit above the sheets 18, there is provided a carriage designated as a whole by the numeral 21, and including a hollow substantially cone-shaped portion or housing 22 formed at its upper end with an annular shoulder 23. The surfacing unit 10 is received through the housing 22, and the casing 14 of said unit is provided with an annular flange 24 which rests upon the shoulder 23.

Extending transversely of and adjacent the carriage 21, is a suspension frame including a plate 25, having formed integral therewith and adjacent its upper edge, a horizontal supporting beam 26 which rests upon and is secured to a girder 27. Formed integral with the plate 25 at the opposite ends thereof are the forwardly directed extension plates 28 and 29, to the inner adjacent faces of which are secured vertical channel members 30 and 31, the channels 31′ of which are

substantially T-shaped in top plan as shown in Fig. 2.

The upper end of the carriage 21 is provided with oppositely disposed substantially rectangular arms 32 and 33 which are slidably received within the channel members 30 and 31. Also slidably mounted within each of the channel members 30 and 31 is a block 34 substantially T-shaped in top plan to snugly fit within the channel 31'. The adjacent faces of the blocks 34 and arms 32 and 33 are provided with pockets 37 and 38 within which are received the opposite ends of compression springs 39 for yieldably supporting the surfacing unit 10.

In order to raise and lower the surfacing unit 10 and carriage 21, the bottom of each channel member 32 and 33 is closed by means of a wall 40, and inserted upwardly through this wall and also through a plate 41, is an adjusting screw 42 having its upper end received within the block 34. Threaded upon each adjusting screw 42 is a gear 44 in constant mesh with a worm 45 mounted upon a shaft 46 contained within a housing 47.

Each of the shafts 46 extends rearwardly of the surfacing machine as shown in Fig. 4 and is connected by means of a universal joint 78 to a shaft 79, which is in turn connected by a universal joint 80 with a shaft 81 having keyed to its outer end a beveled gear 82. The beveled gears 82 are adapted to mesh with similar beveled gears 83 keyed to a horizontal shaft 84 extending transversely of the supporting apparatus. The shaft 84 has secured to one end thereof a beveled gear 85 meshing with a correspondingly bevelled gear 86 mounted at the upper end of the vertically arranged shaft 87, said shaft 87 having keyed to its lower end a bevelled gear 88 meshing with a correspondingly bevelled gear 89 carried by horizontal shaft 90. The shaft 90 has secured thereto a hand wheel 91 and upon rotation of this hand wheel, rotary movement will be imparted through the shaft and gear arrangement set forth above to the gears 44 whereby to raise or lower the blocks 34 and subsequently the carriage 21 and surfacing unit 10. With such a construction, both sides of the supporting apparatus can be simultaneously raised or lowered an equal distance whereby to insure proper contact between the grinding block 17 and glass 18. The hand wheel 91 is so positioned that it is readily accessible to the operator of the machine.

Formed integrally with the extensions 28 and 29 are the downwardly converging bracket arms 49 and 50, the lower ends thereof being formed integral with a forwardly directed horizontal plate 51 secured to a supporting beam 52. This plate 51 is provided with a recess 53 having notches 54, 55 and 56 within which are slidably received the reduced ends of the arms 57, 58 and 59 extending horizontally from the casing 11. Thus, upon vertical movement of the carriage 21 and unit 10, the arms 57, 58 and 59 riding in the notches 54, 55 and 56 will guide the lower end of the machine whereby to prevent the same from lateral swinging movement and to also retain the surfacing unit in a perpendicular position. Eyes 60 and 61 are carried by the carriage 21 in order to facilitate the removal thereof together with the unit 10, while similar eyes 62 and 63 are carried by the surfacing unit 10 in order to facilitate the removal thereof from the carriage 21.

While, for the purpose of illustrating the use and application of the present invention, there has been disclosed a conventional type of grinding machine, yet it is to be understood that the invention is not restricted for use in connection with grinding machines alone, but may be employed for supporting polishing machines or other types of surfacing machines.

At certain times, the tension of the compression springs 39 will vary somewhat so that one side of the supporting apparatus will be slightly lower or higher than the opposite side thereof with the result that the entire weight of the grinding block 17 will not rest evenly upon the glass being surfaced. In order that this condition may be remedied the channel members 30 and 31 are provided at their upper ends with ears 92 through which are threaded vertical adjusting screws 93, said screws resting upon the upper edges of the extension plates 28 and 29. Passing transversely through the channel members 30 and 31 are suitable bolts 94 which operate within vertical slots 95 formed in the extension plates 28 and 29. Suitable nuts 96 are threaded upon the free ends of the bolts 94. With such a construction, when it is desired to raise or lower one side of the supporting apparatus independently of the other in order to compensate for any difference in the tension of the compression springs 39, it is simply necessary to first loosen the nuts 96 and then, by adjusting the screws 93 in the proper direction, raise or lower the channel member at the desired side of the supporting apparatus, after which the nuts 96 should be again tightened to secure the channel member in position. The raising or lowering of the channel member will act to raise or lower the corresponding arm 32 or 33 so that the surfacing unit will be moved to a perpendicular position in order that the entire weight of the grinding block 17, will rest evenly upon the glass being surfaced. The universal couplings 78 and 80 are provided to permit the raising or lowering of the channel members 30 and 31.

In Figs. 6 to 8 inclusive has been shown a somewhat modified form of the present invention. In this form of the invention, as shown in Fig. 6, it will be noted that the arms

32 and 33 have secured to the under surfaces thereof plungers 64 which are slidably received within cylinders 65 carried by the supporting beam 25. The upper ends of the said plungers are reduced as at 66 and are passed upwardly through the arms 32 and 33, suitable nuts 67 threaded upon the upper free ends of the said reduced portions 66 serving to secure the plungers in position. Encircling the plungers 64 and adjustably carried by the upper ends of the cylinders 65 are packing boxes 68 which prevent dirt from entering the cylinders and also prevent any tendency of the plungers to bind. Also, in this form of the invention the lower ends of the bracket arms 49 and 50 are formed integral with a forwardly directed horizontal plate 69 secured to the supporting beam 52 and provided with a recess 70 for receiving the lower end of the surfacing unit. The plate 69 is provided with three spaced bearings 71, 72 and 73 within which are slidably received vertical pins 74 carried by the outer ends of the arms 75, 76, and 77, which are secured to and extend from the casing 11. Thus, these pins 74 sliding within the bearings 71, 72 and 73 serve to guide the lower end of the surfacing unit during the raising and lowering thereof.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement or parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Claims:

1. In apparatus for surfacing glass, a substantially vertically arranged surfacing unit including oppositely disposed substantially horizontal supporting arms, a main support, vertical channel members carried by the main support for receiving the arms therein, means within said channel members for yieldably supporting the said arms, and means for securing the channel members to said main support in such a manner that they may be moved vertically with respect thereto.

2. In apparatus for surfacing glass, a substantially vertically arranged surfacing unit including oppositely disposed substantially horizontal supporting arms, a main support, vertical channel members carried by the main support and receiving the supporting arms therein, means for effecting independent vertical adjustment of said channel members with respect to said support, members slidably arranged within the channel members beneath said arms, and spring means interposed between and bearing against said arms and members for yieldably supporting said unit.

3. In apparatus for surfacing glass, a substantially vertically arranged surfacing unit including oppositely disposed substantially horizontal supporting arms, a main support, vertical channel members carried by the main support and receiving the supporting arms therein, means for effecting independent vertical adjustment of said channel members with respect to said support, blocks slidably mounted within the channel members beneath said arms, compression springs interposed between and bearing against said arms and blocks for yieldably supporting the surfacing unit, and means for adjusting said blocks within said channel members to effect raising and lowering of said unit.

Signed at Toledo, in the county of Lucas and State of Ohio, this 18th day of October, 1926.

ERIK G. STAHLE.